UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,138	11/14/2003	Chih-Ta Star Sung		8199

73696 7590 07/10/2008

Chih-Ta Star Sung
Rm. 308, Bld. 52, No. 195, Sec. 4
Chung Hsin Rd.
Juhdong, 310
TAIWAN

EXAMINER	
FINDLEY, CHRISTOPHER G	

ART UNIT	PAPER NUMBER
2621	

MAIL DATE	DELIVERY MODE
07/10/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/712,138	SUNG ET AL.	
	Examiner	Art Unit	
	CHRISTOPHER FINDLEY	2621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 21 April 2008.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-9,11,12,16-18 and 20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) 1-9,11,12,16-18 and 20 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's arguments filed 4/21/2008 have been fully considered but they are not persuasive.

2. Re claim 1, the Applicant contends that the prior art cited fails to teach or suggest a first and a second on-chip memory. However, the Examiner respectfully disagrees. Owen discloses that the incoming bitstream is first read into a FIFO buffer (Owen: Fig. 2, FIFO 30; column 6, lines 34-38), located within the bounds of the decoder (Owen: Fig. 2). Owen further discloses a second memory for storing macroblocks that have been decoded (Owen: Fig. 2, memory 180; column 8, lines 39-41), wherein the memory may be embedded in the decoder (Owen: column 7, lines 9-19).

Re claim 1, the Applicant also contends that Wee fails to teach or suggest variable length decoding, inverse quantization, and inverse DCT transformation. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.,* 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Owen discloses the above mentioned features, as cited in the previous office action.

3. Re claim 2, the Applicant contends that the prior art fails to teach or suggest that only the block which does not find an equivalent block in previous blocks will go through the procedure of video decompression including VLD, dequantization, and inverse DCT to reconstruct the block of pixels. However, the Examiner respectfully disagrees. Owen discloses that most of the decoder module and all of the DCT encoder module can be

by-passed for frames not having interpicture prediction errors (i.e., large differences) (Owen: column 5, lines 27-31).

4. Re claim 3, the Applicant contends that the prior art fails to teach or suggest that only the block which does not find an equivalent block in previous blocks will go through the procedure of video decompression including VLD, dequantization, and inverse DCT to reconstruct the block of pixels. However, the Examiner respectfully disagrees. Owen discloses that most of the decoder module and all of the DCT encoder module can be by-passed for frames not having interpicture prediction errors (i.e., large differences) (Owen: column 5, lines 27-31).

5. Re claim 4, the Applicant contends that the prior art cited fails to teach or suggest that a previously decoded block is used to represent an incoming block if the DCT coefficients are identical. However, the Examiner respectfully disagrees. Wee discloses that the system exactly re-uses original motion vectors and residuals for an unchanged region (Wee: column 5, lines 30-33).

6. Re claim 5, the Applicant contends that the edited or non-edited decision of Wee does not relate to the claim language. However, the Examiner respectfully disagrees. Wee determines whether there has been a change in pixel values between frames, which corresponds to finding the difference between two frames and re-using previous residuals and motion vectors when there is no change between frames (Wee: column 5, lines 27-33). Furthermore, the motion estimation and motion compensation are an integral part of both encoding and decoding, since both encoders and decoders must use motion compensation for frame prediction.

7. Re claim 6, the Applicant contends that the motion estimation and compensation of the prior art does not relate to the claim language. However, the Examiner respectfully disagrees. Wee discloses the use and re-use of residuals and motion vectors (Wee: column 5, lines 30-33), which indicate the movement of a block to a neighboring region.

8. Re claim 7, the Applicant contends that the motion estimation and compensation of prior art cited does not relate to the claim language. However, the Examiner respectfully disagrees. Wee discloses comparing the number of changed pixels to a threshold for determining a level of disparity between blocks (Wee: column 8, lines 26-33)

9. Re claim 8, the Applicant contends that the prior art and Examiner's analysis does not relate to decompressing a video block of a bitstream. However, the Examiner respectfully disagrees. Both Owen and Wee disclose that their inventions relate to decompression (Owen: column 7, line 54 through column 8, line 6 and Wee: column 2, lines 32-37). Since claim 8 is dependent upon claims 1 and 7, which the Examiner rejected with citations from Owen and Wee, the Examiner's obviousness analysis, taken in view of Owen and Wee, also in turn relates to the decompression processing of Owen in view of Wee.

10. Re claim 9, the Applicant contends that the prior art cited does not relate to decompressing a video block of a bitstream. However, the Examiner respectfully disagrees. Both Owen and Wee disclose that their inventions relate to decompression (Owen: column 7, line 54 through column 8, line 6 and Wee: column 2, lines 32-37).

11. Re claim 11, the Applicant contends that the prior art cited fails to teach or suggest a first and a second on-chip memory. However, the Examiner respectfully disagrees. Owen discloses that the incoming bitstream is first read into a FIFO buffer (Owen: Fig. 2, FIFO 30; column 6, lines 34-38), located within the bounds of the decoder (Owen: Fig. 2). Owen further discloses a second memory for storing macroblocks that have been decoded (Owen: Fig. 2, memory 180; column 8, lines 39-41), wherein the memory may be embedded in the decoder (Owen: column 7, lines 9-19).

12. Re claim 11, the Applicant also contends that the prior art cited fails to teach or suggest that the decompressed stream is recompressed before storing it into the second memory. However, the Examiner respectfully disagrees. As stated in the Applicant's own argument regarding this claim 11, Owen discloses that the decoded macroblock is recompressed before it is stored in memory (Owen: column 8, lines 59-60).

13. Re claim 12, the Applicant traverses the Examiner's Official Notice saying that lossless compression and decompression is not well known to those of ordinary skill in the art. However, as support for the Examiner's Official Notice, the Examiner submits that Oami (US 6363119 B1) teaches techniques for compressing images (image signals), and in particular, to hierarchical image coding/decoding devices and hierarchical image coding/decoding methods by which lossless decoding of coded images is realized (Oami: column 1, lines 7-11). Since Owen, Wee, and Oami all relate to predictive video coding and decoding, one of ordinary skill in the art at the time of the

invention would have found it obvious to combine the lossless coding techniques of Oami with the re-use of motion compensation data of the combined system of Owen and Wee in order to provide an image coding method and image decoding method by which reversible image coding with improved coding efficiency can be realized (Oami: column 4, lines 55-62).

14. Re claim 16, the Applicant contends that the prior art cited fails to teach or suggest a first and a second on-chip memory. However, the Examiner respectfully disagrees. Owen discloses that the incoming bitstream is first read into a FIFO buffer (Owen: Fig. 2, FIFO 30; column 6, lines 34-38), located within the bounds of the decoder (Owen: Fig. 2). Owen further discloses a second memory for storing macroblocks that have been decoded (Owen: Fig. 2, memory 180; column 8, lines 39-41), wherein the memory may be embedded in the decoder (Owen: column 7, lines 9-19).

15. Re claim 16, the Applicant also contends that Wee does not relate to decompressing a video block of a bitstream. However, the Examiner respectfully disagrees. Both Owen and Wee disclose that their inventions relate to decompression (Owen: column 7, line 54 through column 8, line 6 and Wee: column 2, lines 32-37).

16. Re claim 17, the Applicant contends that the prior art cited fails to teach or suggest comparing the block and selecting the result of a previous block to represent the target video block of the bitstream. However, the Examiner respectfully disagrees. Wee discloses detecting whether the region of interest has changed and if no change

has occurred the system exactly re-uses original motion vectors and residuals (Wee: column 5, lines 27-33).

17. Re claim 18, the Applicant contends that the prior art cited fails to teach or suggest that the matched block in previous blocks is copied to represent the target block. However, the Examiner respectfully disagrees. Wee discloses detecting whether the region of interest has changed and if no change has occurred the system exactly re-uses original motion vectors and residuals (Wee: column 5, lines 27-33).

18. Re claim 20, the Applicant also contends that Wee does not relate to decompressing a video block of a bitstream. However, the Examiner respectfully disagrees. Both Owen and Wee disclose that their inventions relate to decompression (Owen: column 7, line 54 through column 8, line 6 and Wee: column 2, lines 32-37).

19. Therefore, the Examiner maintains the rejection of claims 1-9, 11-12, 16-18, and 20 as being unpatentable over Owen et al. (US 6028635 A) in view of Wee et al. (US 6697061 B1).

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-9, 11-12, 16-18, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Owen et al. (US 6028635 A) in view of Wee et al. (US 6697061 B1).

Re **claim 1**, Owen discloses a method for decoding a video stream, comprising: A method for decoding a video stream, comprising: saving the coming block of compressed video to the first on-chip temporary storage device (Owen: Fig. 2, FIFO 30; column 6, lines 34-38), applying the variable length decoding method to decode the video bit stream and block by block recovering the DCT coefficients and dequantizing the coefficient by multiplying the quantization table and inverse transforming the DCT coefficients to matrix of pixel values (Owen: column 7, line 54, through column 8, line 6); saving the decompressed block of pixels into the second on-chip temporary storage device (Owen: Fig. 2, memory 180; column 8, lines 39-41; column 7, lines 9-19). Owen does not specifically disclose looking up incoming compressed block of pixel data to the blocks of received pixel data saved in the first temporary storage device and identifying whether any of the previous block is equivalent to the coming block; and if a "Match" happens: utilizing the block pixel data saved in the second temporary storage device corresponding to the matched block of bit stream to represent the block of decompressed bit stream, otherwise, decompressing the block of bit stream according to the normal decompression procedure. However, Wee discloses selective re-use of compression data, including looking up the DCT bit stream table when receiving an input stream to find whether a new block matches a previous block (Wee: column 4, lines 31-36); and re-using previously processed block data to reconstruct the new block

(Wee: column 3, lines 51-55). Since both Owen and Wee disclose methods of processing video data and performing motion compensation, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the decompression utilizing efficient memory of Owen with the data re-use of Wee in order to provide a computationally efficient method for motion compensation, thereby optimizing processor time and resources (Wee: column 3, lines 8-15). The combined system of Owen and Wee has all of the features of claim 1.

Re **claim 2**, the combined system of Owen and Wee discloses a majority of the features of claim 2, as discussed above in claim 1. Additionally, Owen discloses decoding the DCT bit stream and saving the decoded result of block of pixels into the second temporary storage device and saving the DCT coefficients into the first temporary storage device if the compressed block fails to match any DCT block reference bit stream in the DCT bit stream table of the previous blocks (Owen: column 5, lines 27-31, most of the decoder module and all of the DCT encoder module can be by-passed for frames not having interpicture prediction errors (i.e., large differences); column 8, lines 22-25, 39-41, and column 8, line 59, through column 9, line 5).

Re **claim 3**, the combined system of Owen and Wee discloses a majority of the features of claim 3, as discussed above in claim 2. Additionally, Owen discloses saving the decompressed result of DCT bit stream into an on-chip second temporary buffer (Owen: column 8, lines 22-25, 39-41, and column 8, line 59, through column 9, line 5).

Re **claim 4**, the combined system of Owen and Wee discloses a majority of the features of claim 4, as discussed above in claim 1. Owen does not specifically disclose

that the coming DCT input bit stream and one of the previous blocks of DCT coefficients are identical, then, the decoded block of pixels is used to represent the coming block. However, Wee discloses an instance where a block of the video frame is unchanged so the previously stored data for the corresponding block is re-used (Wee: Fig. 8, code = '00'; column 5, lines 30-33). Since both Owen and Wee disclose methods of processing video data and performing motion compensation, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the decompression utilizing efficient memory of Owen with the data re-use of Wee in order to provide a computationally efficient method for motion compensation, thereby optimizing processor time and resources (Wee: column 3, lines 8-15).

Re **claim 5**, the combined system of Owen and Wee discloses a majority of the features of claim 5, as discussed above in claim 1. Owen does not specifically disclose that the DCT input bit stream and the DCT reference bit stream are matched if a difference between the DCT input bit stream and the DCT reference bit stream is lower then a predetermined tolerance. However, Wee discloses that the blocks match if the amount of change is below a predetermined threshold (Wee: Fig. 8/183; column 8, lines 26-33). Since both Owen and Wee disclose methods of processing video data and performing motion compensation, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the decompression utilizing efficient memory of Owen with the data re-use of Wee in order to provide a computationally efficient method for motion compensation, thereby optimizing processor time and resources (Wee: column 3, lines 8-15).

Re **claim 6**, the combined system of Owen and Wee discloses a majority of the features of claim 6, as discussed above in claim 1. Owen does not specifically disclose representing a target block with a decompressed block pixels within neighboring blocks if a compressed stream of the previously saved block in the first temporary storage device is identical to a target block stream. However, Wee discloses using previously stored video data if a match occurs between blocks (Wee: column 5, lines 30-33). Since both Owen and Wee disclose methods of processing video data and performing motion compensation, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the decompression utilizing efficient memory of Owen with the data re-use of Wee in order to provide a computationally efficient method for motion compensation, thereby optimizing processor time and resources (Wee: column 3, lines 8-15).

Re **claim 7**, the combined system of Owen and Wee discloses a majority of the features of claim 6, as discussed above in claim 1. Owen does not specifically disclose that a threshold value is compared to a weighted difference of compressed DCT coefficients of at least one previously saved block and a target block for determining the similarity. However, Wee discloses using pixel difference values for motion compensation (Wee: column 2, lines 25-28) and that the blocks match if the amount of change is below a predetermined threshold (Wee: Fig. 8/183; column 8, lines 26-33). Since both Owen and Wee disclose methods of processing video data and performing motion compensation, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the decompression utilizing efficient memory of Owen

with the data re-use of Wee in order to provide a computationally efficient method for motion compensation, thereby optimizing processor time and resources (Wee: column 3, lines 8-15).

Re **claim 8**, neither Owen nor Wee specifically discloses that when a weighted difference between at least one previously saved block stream and a target block stream is applied to determine whether a lossy decoding is applied in decompressing the video bit stream. However, The Examiner takes Official Notice that when performing block matching, compression is lossless when the difference is large, because this indicates that the blocks are unrelated and subsequently processed independently of the other blocks. When the block differences are within a threshold range, there is some correlation, but the blocks are not identical. Therefore, one of ordinary skill in the art at the time of the invention would have found it obvious that when a difference value is near a threshold, meaning that the target and reference blocks are very similar in value but not identical, there is some loss in accuracy implied by the difference when re-using data from previous frames.

Re **claim 9**, Owen does not specifically disclose that one of previously saved decoded blocks is selected to represent a target block if a weighted sum of DCT coefficient difference between a target block and the closest block saved in the storage is less than a predetermined threshold. However, Wee discloses that the blocks match if the amount of change is below a predetermined threshold (Wee: Fig. 8/183; column 8, lines 26-33). Wee further discloses that the previously stored video data is re-used if the difference falls below a threshold (Wee: Fig. 8/183). Since both Owen and Wee

disclose methods of processing video data and performing motion compensation, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the decompression utilizing efficient memory of Owen with the data re-use of Wee in order to provide a computationally efficient method for motion compensation, thereby optimizing processor time and resources (Wee: column 3, lines 8-15).

Re **claim 11**, the combined system of Owen and Wee discloses a majority of the features of claim 11, as discussed above in claim 1. Additionally, Owen discloses that a block of decompressed bit stream is compressed before being stored to the second temporary buffer for future representing new targeted block stream (Owen: column 8, line 59, through column 9, line 5).

Re **claim 12**, neither Owen nor Wee specifically states that a decompressed bit stream is compressed through a lossless compression mechanism before being stored to a buffer and is decompressed for future representing a new block stream. However, The Examiner takes Official Notice that one of ordinary skill in the art at the time of the invention would have found it obvious that a block which is stored to be used as a reference block for future comparisons and re-use would be compressed with as little loss as possible in order to ensure accurate block matching and representation.

Re **claim 16**, Owen discloses an apparatus for decoding a video stream, comprising: a bit stream decoding unit including a VLD, variable length deciding and reconstructing the video bit stream to DCT matrix and a DeQuantization unit multiplying the DCT matrix to inverse transforming and recovering the block of pixel matrix (Owen: column 7, line 54, through column 8, line 6); the first on-chip storage device for storing

compressed video data stream (Owen: Fig. 2, FIFO 30; column 6, lines 34-38) and the second on-chip storage device for storing the corresponding decompressed pixel data of at least one previous block (Owen: Fig. 2, memory 180; column 8, lines 39-41; column 7, lines 9-19). Owen does not specifically disclose a circuit of comparing a coming compressed stream to at least one previously saved stream; and a circuit of selecting one of previously saved decoded blocks to represent a targeted block if the targeted block is identical to one of the previously saved blocks. However, Wee discloses selective re-use of compression data, including a circuit of comparing a coming compressed stream to at least one previously saved stream (Wee: column 4, lines 31-36); and a circuit of selecting one of previously saved decoded blocks to represent a target block if a target block is identical to one of the previously saved blocks (Wee: column 3, lines 47-55). Since both Owen and Wee disclose methods of processing video data and performing motion compensation, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the decompression utilizing efficient memory of Owen with the data re-use of Wee in order to provide a computationally efficient method for motion compensation, thereby optimizing processor time and resources (Wee: column 3, lines 8-15).

Re **claim 17**, the combined system of Owen and Wee discloses a majority of the features of claim 17, as discussed above in claim 16. Owen does not specifically disclose that an output of a comparator is used to select the decoded pixels stored in the on-chip second temporary buffer to represent the target block pixels. However, Wee discloses that an output of a comparator is used to select the decoded pixels to

represent the target block pixels (Wee: column 5, lines 11-32; column 8, lines 58-65). Since both Owen and Wee disclose methods of processing video data and performing motion compensation, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the decompression utilizing efficient memory of Owen with the data re-use of Wee in order to provide a computationally efficient method for motion compensation, thereby optimizing processor time and resources (Wee: column 3, lines 8-15).

Re **claim 18**, the combined system of Owen and Wee discloses a majority of the features of claim 18, as discussed above in claim 16. Owen does not specifically disclose that decoded block pixels represent the target block pixels by copying the decoded block pixels. However, Wee discloses that decoded block pixels represent the target block pixels by copying the decoded block pixels (Wee: column 5, lines 27-33). Since both Owen and Wee disclose methods of processing video data and performing motion compensation, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the decompression utilizing efficient memory of Owen with the data re-use of Wee in order to provide a computationally efficient method for motion compensation, thereby optimizing processor time and resources (Wee: column 3, lines 8-15).

Re **claim 20**, the combined system of Owen and Wee discloses a majority of the features of claim 20, as discussed above in claim 13. Owen does not specifically disclose that in decompressing an I-type frame or a JPEG still pictures, one of previously decoded and saved blocks is selected to represent the target block.

However, Wee discloses that in decompressing an I-type frame or JPEG still pictures one of previously decoded and saved blocks is selected to represent the target block (Wee: column 7, lines 10-27). Since both Owen and Wee disclose methods of processing video data and performing motion compensation, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the decompression utilizing efficient memory of Owen with the data re-use of Wee in order to provide a computationally efficient method for motion compensation, thereby optimizing processor time and resources (Wee: column 3, lines 8-15).

Conclusion

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

a. Quantizing and dequantizing circuitry for an image data companding device

Ito (US 5430556 A)

b. Image encoding apparatus and image decoding apparatus

Yokose et al. (US 6782133 B2)

c. Compression circuitry for generating an encoded bitstream from a plurality of video frames

Bolton (US 20030231710 A1)

d. Method of compression-coding a motion picture and an apparatus for same

Fujihara (US 5530479 A)

e. Coding method and apparatus for resampling and filtering images using discrete cosine transforms

Wober et al. (US 5740284 A)

f. Conversion system using programmable tables for compressing transform coefficients

Ouyang (US 5835145 A)

g. System and method for performing motion estimation in the DCT domain with improved efficiency

Lempel (US 5796434 A)

Contact

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER FINDLEY whose telephone number is (571)270-1199. The examiner can normally be reached on Monday through Friday, 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha D. Banks-Harold can be reached on 571-272-7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Marsha D. Banks-Harold/
Supervisory Patent Examiner, Art Unit 2621
/Christopher Findley/